

Abstract

There is provided a semiconductor device capable of ensuring a complete enhancement-mode operation and realizing a power transistor excellent in the low-distortion, high-efficiency performance. On a surface of a substrate (1) composed of single crystal GaAs, a second barrier layer (3) composed of AlGaAs, a channel layer (4) composed of InGaAs, a third barrier layer (12) composed of InGaP and a first barrier layer (11) composed of AlGaAs are stacked in this order, while placing in between a buffer layer (2). Relation of $\chi_1 - \chi_3 \leq 0.5 * (E_{g_3} - E_{g_1})$, where χ_1 is electron affinity of the first barrier layer (11), E_{g_1} is a band gap of the same, χ_3 is electron affinity of the third barrier layer (12), and E_{g_3} is a band gap of the same, is satisfied between the first barrier layer (11) and the third barrier layer (12).